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October 28, 1950

SCIENCE NEWS LETTER

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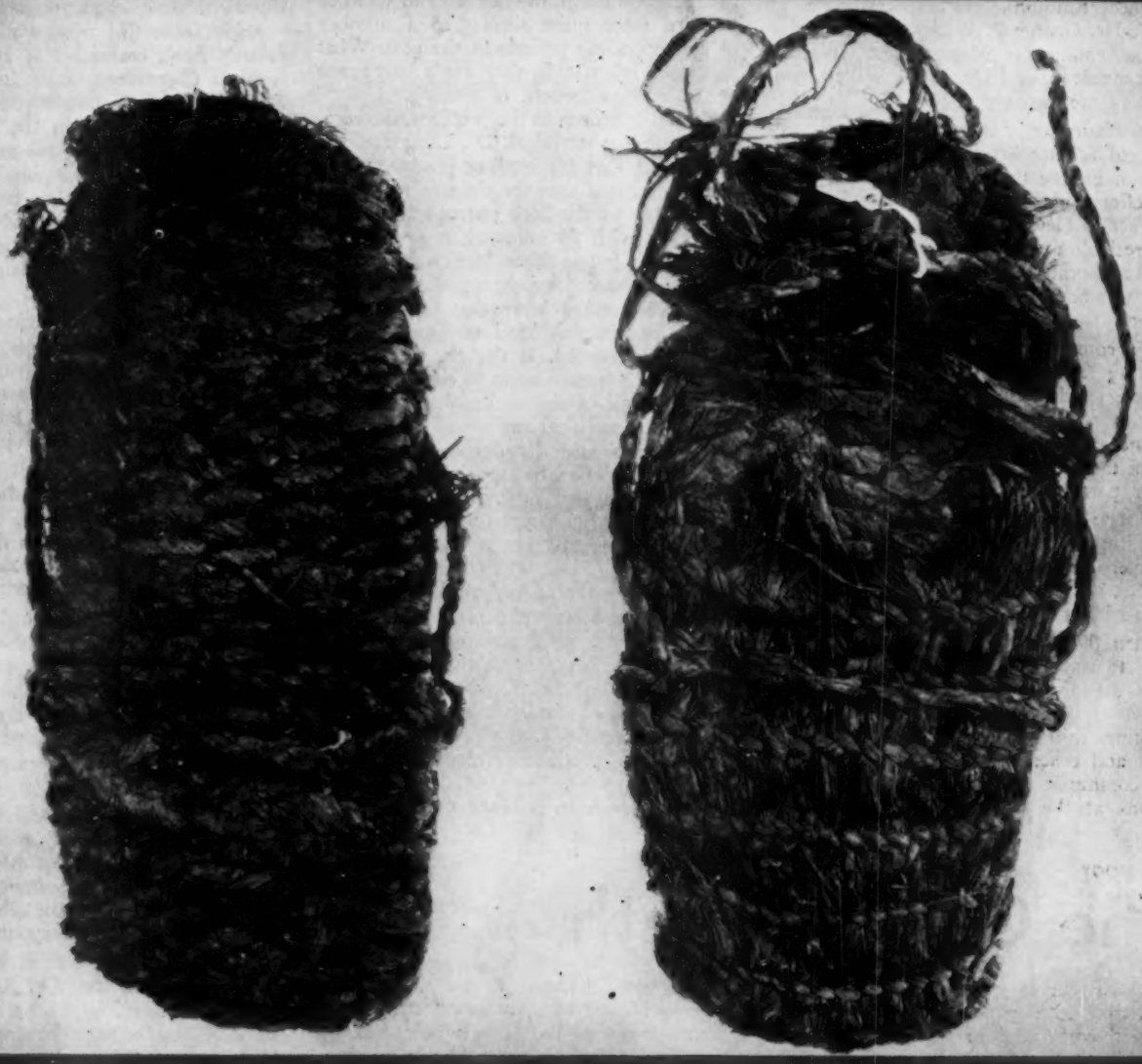
THE WEEKLY SUMMARY OF CURRENT SCIENCE



"Footprints in the Sands of Time"

See Page 278

A SCIENCE SERVICE PUBLICATION

$5.50 A YEAR

VOL. 58 NO. 18 PAGES 273-288

METEOROLOGY

Rainmaking Not Proved

➤ AN OFFICIAL committee of the American Meteorological Society, appointed to look into the claims of the rainmakers, will declare that the possibility of artificially producing any useful amounts of rain has not been demonstrated so far, Science Service has learned.

The findings of the committee will appear in a future issue of the BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY, signed by the four members, Dr. Bernard Haurwitz, chairman of the department of meteorology at New York University, Gardner Emmons, research associate at NYU, Dr. George P. Wadsworth, professor of mathematics at Massachusetts Institute of Technology, and Dr. H. C. Willett, professor of meteorology at MIT.

Dr. Haurwitz, chairman of the committee, told Science Service that he personally did not believe that last winter's rainmaking efforts of Dr. Wallace Howell under contract to New York City resulted in any "appreciable amount added to New York's reserves because of seeding." This, however, was not part of the report of the committee.

The committee report begins by complimenting Dr. Irving Langmuir, Vincent Schaefer and their co-workers of General Electric and Project Cirrus for the great advance in recent years in the understanding of the formation of atmospheric ice and water particles.

It states that because these matters are still imperfectly understood and because weather forecasting is still not perfect, it is extremely difficult to evaluate claims of success in rainmaking.

Then the committee tackles the problem from two angles. First approach is to estimate the probable rain if no attempts to make rain by cloud seeding had taken place. Looking into experiments by Dr. Langmuir and others in New Mexico last year, the committee declares that weather conditions at the time were quite favorable and adequately explain the moderate amount of rain that occurred.

Dr. Langmuir has claimed that the Weather Bureau did not forecast the rain that he said was produced by his cloud seeding.

Concerning later papers by Dr. Langmuir which stated that seeding in New Mexico last winter may have produced dry conditions there but abnormal amounts of rainfall in the Mississippi valley, the committee declares that it is even more difficult to judge the effects of seeding. However, the members claim, the rainfall and weather patterns were quite similar to a number of corresponding periods in the past. What happened last winter, they imply, happened before without benefit of seeding.

Second approach to the problem, the committee says, is statistical. Dr. Langmuir has never said that his seeding produces rain. But he has said that the chances were only one in ten to the 26th power—that is the figure 10 with 26 zeros after it—that the rain which fell in New Mexico after seeding was produced by chance alone.

The committee claims that the necessary precautions in this kind of figuring have not been observed. It declares that necessary to such a calculation of odds is a complete analysis of the entire situation, starting with a statistical analysis of the original data on moisture distribution, winds and rainfall in relation to topography.

Since these and other factors have not been observed, the committee says, the odds cited cannot be accorded scientific credence.

This is not the end of the argument on rainmaking. However, concurrent with the argument, attempts are being made to bring the two sides together so they can at least agree on a body of facts from which to draw their conclusions. Conferences between proponents of the two sides may be expected to produce results sometime in the future.

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SOCIOLOGY

The Cost of Death

➤ AMERICANS pay more for funerals than they do as patients in hospitals.

Death costs more than $700,000,000 yearly. This is the estimate of Dr. William M. Kephart, of the University of Pennsylvania, who reports a survey he made in Philadelphia to the AMERICAN SOCIOLOGICAL REVIEW (Oct.).

Largest item of expense is the casket, ranging in price from about $75 to $15,000. The former is cloth-covered, the latter of solid bronze. In Philadelphia, there is practically no sale for the bronze type although it is reported that four or five are sold each year in New York City to customers other than gangsters. Lavish gangster funerals, Dr. Kephart reports, are largely mythical and evidently a Hollywood invention.

Class distinctions that set off the rich Philadelphian from his poorer neighbors are still in force after death. But they are not the same as they were in past years.

Historically, the rich man was buried in a large cemetery lot and his grave was marked by a large memorial or mausoleum. Today, if you see a mausoleum it probably still marks an upper class grave, but there are fewer now than formerly. Class distinctions show up in the location of the grave, upper class desirability depending upon such factors as who is buried nearby and whether the lot is on "high ground."

At the "end of the line" so far as social class is concerned is the potter's field. Lower class families will go to almost any length to avoid burial there. Bodies interred at potter's field are stripped of all the traditional symbols. They are buried without flowers, without clothes, without graves and without names. Burials are in long rows of trenches with a number on a wooden paddle marking each body. If the body is not claimed in a certain length of time, it is dug up and burned in an adjoining crematory to make room for new bodies.

Aside from this treatment of bodies in potter's field, cremation is an upper class custom. Cremations have increased from 7% to 17% in the last 10 years in Philadelphia, almost entirely in the upper classes. This trend presents a serious problem not only to funeral directors but to cemeteries. Cremation urns cost only a fraction of what caskets do. Also the normal four- or six-grave lot holds eight or 12 bodies in caskets, but it will hold an almost unlimited number in urns.

More or less public "viewing of the body," is a poorer class custom; upper class families restrict the viewing to members and do not exchange comments on the appearance of the body. One out of ten of those on the social register have no viewing.

There appear to be no class differences in the kind of flowers used at funerals or in cemeteries; that depends on the season. But there is a difference in flower arrangement. The rich like baskets and sprays. The poor prefer wreathes, pillows of flowers, "bleeding hearts" and set pieces such as "gates ajar."

The wearing of mourning and mourning bands and use of crepes on the door are going out of style completely in all classes. But a small minority of poor people still shutter the windows and stop the clock to show the hour of death.

If you see a 20- to 30-car funeral procession, it is probably that of a poor person. When an upper class funeral leaves the funeral parlor, the majority of those attending do not proceed to the cemetery. Among the poor practically everyone goes.

Ministering to the dead is big business in the United States, Dr. Kephart reports. There are about 25,000 funeral directors and some 520 casket manufacturers currently in business, and the number of cemeteries has been estimated at about 40,000.

Funeral directors want to be considered a professional group and require a course at a mortuary college in addition to high school graduation for members of the group. There are 24 mortuary colleges in the United States, two affiliated with major universities.

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MICROBIOLOGY

Germ Warfare Detection

Centers for detection of germ warfare are being planned as a part of civil defense. A number of agents could be used in attack, but large-scale epidemics are unlikely.

➤ ESTABLISHMENT of germ warfare detection centers is a part of Federal civil defense plans, Dr. Victor H. Haas, director of the Microbiological Institute, National Institutes of Health, revealed at the meeting in Chicago of the College of American Pathologists.

Federal agencies are also now planning as part of their civil defense activities to train selected scientists in germ warfare detection and defense methods. These in turn will train other scientific and technical personnel.

The training is needed because laboratory workers engaged in usual peacetime operations are not familiar enough with procedures used in germ warfare detection.

Laboratory directors must be prepared to detect and frustrate attempts to produce germ warfare agents in the United States, Dr. Haas warned.

"An enemy can attack us with infectious agents or biological toxins," Dr. Haas declared emphatically in one of the few statements that have been made by a government official on this hush-hush subject since the release early in 1946 of the Merck report on the nation's biological warfare program during the last war.

Large-scale epidemics, however, are unlikely to result from germ warfare attacks, in Dr. Haas' opinion.

Many disease-causing germs and their poisonous products are stable, resistant to heat, drying and sunlight, capable of quantity production and suitable for dissemination in the air, water, milk and so on, Dr. Haas stated.

"Any bacteriologist can think of a number of agents which could be used to attack us," he said, giving as examples: 1. viruses, such as influenza or psittacosis (parrot fever); 2. rickettsiae, such as those causing Q fever or typhus; 3. bacteria, such as the typhoid or cholera organisms or the agents causing plague or tularemia; 4. fungi, such as histoplasma or coccidoides; and 5. toxins such as that produced by the botulism germ.

"There is abundant reason," he declared, "for believing such agents could be used against us as part of an attack with explosive munitions or by sabotage before or during actual warfare.

"A simple but important measure in helping to prevent attacks with these agents will be to frustrate attempts to produce them here in the United States.

"An enemy with access to a laboratory might manufacture sufficient quantities of live organisms or their toxins to permit extensive sabotage.

"Alertness and vigilance on the part of laboratory directors, careful supervision of all activities under their control and scrutiny of any excessive or unusual demands upon bacteriological supplies or equipment should minimize the possibilities for surreptitious producton."

Because agents of biological warfare, or B. W. as scientists term it, are not detectable by the physical senses, Civil Defense Health Services will have to set up a system of air sampling and accumulate records of normal germ populations of the air in target areas and strategic buildings and installations under a variety of conditions, Dr. Haas stated.

Present methods and apparatuts are inadequate for detecting most of the agents that might be used to attack us, Dr. Haas said. Even such germs as were caught by the samplers would be identified too slowly. But he thinks a start could be made and expects improvements in the methods.

The first sign of an attack with B. W. agents, he said, will probably come some days after the attack has taken place and will depend on the appearance of illnesses resulting from exposure to the germs or toxins.

We can expect, he said, "a number of primary casualties resulting from a mass initial exposure, and that secondary cases will be absent or minimized.

"It is not expected that large-scale, self-perpetuating epidemics would develop as a result of attack."

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MEDICINE-AERONAUTICS

Ultrasonic Noise Harmless

➤ THE HIGH frequency noise of the exhaust of turbo-jet engines has been found not guilty of causing nausea, weakness, irritable disposition and other vague ills. So Dr. Hallowell Davis, expert on hearing of the Central Institute for the Deaf, St. Louis, Mo., reported to the National Noise Abatement Symposium in Chicago, Ill.

Ultrasonic noise that is beyond the range of your hearing will not hurt you—unless the sound is intense enough to cook a small

HOME OF RESEARCH—The main building of the General Electric Research Laboratory located at the Knolls near Schenectady, N. Y. is shown above. "Universal space" design, provided by ready availability of services and use of movable steel partitions, permits establishment of rooms of any size ranging from six feet to the full length of the building. The four other principal structures are the radiation laboratory, the low-temperature laboratory, a chemical pilot plant and a heating plant.

animal by the heat generated in its fur.

The vague symptoms which you may really feel on exposure to the turbo-jet noise are actually due to the very intense middle and low frequency noise that is also present.

Dr. Davis reported a study of the harmful effects of noise made by Dr. Karl Kryter, director of the Human Resources Research Laboratory at Bolling Air Force Base, under a contract between the Office of Naval Research and the Central Institute for the Deaf.

Steady or expected noises do not interfere with work to any significant extent, it was found. In fact, some evidence was obtained that noise may "insulate" a person from intermittent distractions so that on some tasks, such as aiming a gun, performance is better in noise than in quiet.

The explanation for this is in the ability of the individual to adapt or "get used to" steady noise and to the fact that a person can usually increase his effort, if necessary.

Even in a hospital, the steady hum of an electric fan can prevent patients from complaining about loud voices down the hall, because it masks them so that they are not heard.

Gun fire and other shock or blast waves cause partial deafness that may last for a few minutes or several days and if the noise is repeated this partial deafness may be permanent and may get worse with continued exposure.

Ear plugs can prevent deafness from this kind of loud noise and also improve the hearing of speech in noisy surroundings. Cotton does not give much protection against low and middle frequency noises, but it does cut out the high frequencies which are the most annoying.

The most important effect of noise, Dr. Davis said, is its interference with communication. In situations where teamwork is important, this may be a serious hazard.

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MEDICINE

Rice Diet Evaluated

➤ THE RICE diet for high blood pressure helps patients and has given good results in more than half of one group, but is not in its present form a practical method of continued treatment in most cases.

This, in brief, are the conclusions of a team of medical scientists at Columbia University College of Physicians and Surgeons in New York. Their conclusions are based on results with 50 patients, all of whom were in the hospital throughout the diet test and who for an average of 10 and one-half weeks were given the diet, exactly as prescribed by its originator, Dr. Walter Kempner of Duke University.

The diet consists of an average of almost one pound of rice daily plus white sugar or dextrose and fruit or fruit juice.

The Columbia physicians report in the AMERICAN JOURNAL OF MEDICINE that they "concur in Dr. Kempner's opinion that this specific diet, if followed with sufficient attention to detail, specifically reduces the blood pressure in a significant proportion of patients with severe essential hypertension."

"It would appear," they stated, "that the effects of the rice diet exceed, under controlled conditions at any rate, any other types of treatment for this disease short of sympathectomy (cutting of the sympathetic nerves in the spinal region). As far as we are able to ascertain, the drop in blood pressure is due chiefly to the very low sodium, or salt, content of the rice diet."

It was emphasized, however, that most of the patients on the strict diet returned to their hypertensive condition once the diet was halted.

The medical scientists also warned that although the rice regimen has an important place in the treatment of severe essential hypertension, it is not, in its present form, a practical method of sustained therapy in most cases.

They pointed out that the diet is extremely unpalatable, monotonous and difficult to maintain long enough to exert its effects.

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Question Box

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Photographs: Cover, L. S. Cressman, University of Oregon; p. 275, General Electric; p. 277, New York State Science Service; p. 279, Willys-Overland Motors, Inc.; p. 284, American Red Cross.

SCIENCE NEWS LETTER
VOL. 58 OCTOBER 28, 1950 No. 18

44,300 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 4439.

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GENERAL SCIENCE

Draft Test Tough

Although the AFQT is difficult if one finishes in the 45 minutes allowed, it is easy to get enough correct answers to be accepted by the Army.

By MARJORIE VAN DE WATER

➤ THE induction test given to drafted men is plenty tough. I know because I took it. On the other hand, it would be easy to get the small score required to pass it and get into the Army.

The test I took is the AFQT, Armed Forces Qualification Test, the source of so much controversy recently. Selective Service Director Lewis B. Hershey says that too many men are flunking it. The Army insists that it is no more difficult than is necessary to keep out of the Army men who are so stupid that they would be more dangerous to the Army than the enemy. The test is designed to pass all but the lowest 13% of men drafted.

First you work out two pages of samples. These give you a chance to learn how to mark your answer sheet so that it can be scored by machine, and how to go about solving the problems. These sample questions are answered for you, or you are given the answers by the examiner and have a chance to rub out your answer and put the right one down.

Then, at the signal, you turn the page and start in. You meet a group of questions on the meaning of words. In each case you have to make a choice of one out of four words that is nearest in meaning to an underlined word in a sentence. This was as easy as apple pie for me.

Then came a group of arithmetic questions. These were easy too.

Next were a group of patterns. Here you had to look at a design and choose one out of four drawings that could be folded up to look like the figure given at the left, that could be unfolded to form it, or that could be turned around to match it.

This job was tough for me. The psychologists say that ability on this test is a good index of ability at mechanical work such as that required in the Army.

I dare say that most of the men tested would breeze through these patterns and might have more trouble than I did with the word tests. But my impression was that even if I had been trying to fail them, the chances are I might have passed by accident. I really had to puzzle. In the whole test I missed seven questions and six of them were these patterns.

After a few of these questions on patterns you come to another group of word tests and then another group of arithmetic problems and another set of patterns. This is followed by other groups of these three types of question, each group more difficult than the preceding in an ever ascending spiral of toughness. If you finish the whole test in the 45 minutes allowed you really reach some brain busters.

But, on the other hand, it is hard to see how any school boy would fail to get enough answers correct to get the score required to be acceptable in the Army. I answered more than two and a half times as many questions correctly as are necessary to pass.

All the representatives of the press who took the test with me received scores that would make them eligible for Officers Candidate School.

I am not going to Officers Candidate School, but, except for the accident of sex and age, I might be on my way.

While we of the press were taking the test, some drafted men who had failed were being interviewed. This is regular procedure to guard against goldbricking. A few of the men were found, on the basis of their answers in the interview, to be clearly malingering on the test. They are going into the Army. A few others were just as clearly incapable of passing. One man left the Army officer in doubt as to whether he was dumb or pretending to be. He was sent back to his local draft board for investigation.

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NUTRITION

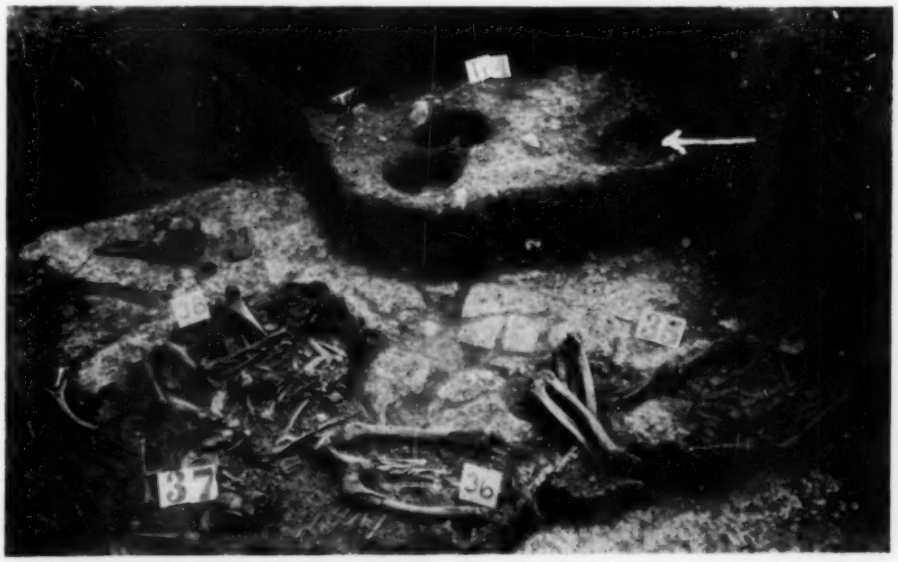
Beriberi Threat Cut

➤ FOR 1,000,000,000 people of the world's ricelands, a scientific experiment on Bataan Peninsula in the Philippines has offered new hope that the white, polished rice of half the world's diet will not always bring with it the crippling, killing disease called beriberi.

In two years, doctors of the Philippine Government, aided by the U. S. Public Health Service and a private U. S. foundation, the Williams-Waterman Fund, have saved an estimated 220 lives and cut the beriberi mortality rate to zero in at least one area, by widespread distribution of vitamin-enriched rice.

Nutrition specialists of the United Nations' Food and Agriculture Organization in Washington, although not involved directly in the two-year-old program, said the figures and results released by the Williams-Waterman Fund were "very impressive."

They said nutritional deficiencies of the Far East's rice-based diet have long been considered a top-ranking item on the UN's list of world problems. This year in Ran-



RADIOACTIVE DATING—Charcoal from three hearths (see arrow in right background) dated by the radiocarbon calendar were found to be about 5,000 years old. Taken from the Lamoka Lake site in New York State, these charcoal samples show that fishing and hunting Indians were living in New York State about 3000 B.C., prior to the New Stone Age of western Europe and about the time the Great Pyramids on the Nile were erected.

goon, the Nutrition Committee for South and East Asia recommended that a team of international experts be sent to study the startling results of the experiment on Bataan.

Before it is milled and polished, rice has a coating of bran and germ which contains most of the grain's vitamin and mineral richness. But most Asiatic peoples will not eat unmilled rice. It is a mark of social prestige to eat rice which is white and clean of its natural coat. In addition, rice which has been milled can be stored longer without spoilage.

In parts of India, parboiled rice is eaten, and the beriberi mortality is low. During World War II in Japan, a government order cut down the amount of milling which rice could be given, and with the resultant increase in nutritional value of the rice, beriberi went down.

The third method of fighting rice malnutrition is to "enrich" white rice artificially, by adding a coating of thiamine (vitamin B1), niacin and iron. This process, developed by the Hoffmann La Roche chemical corporation in this country, is the basis of the experiment on Bataan.

Dr. Robert R. Williams, a chemist world-famed for his synthesis of vitamin B1 in the 1930's, got his first lead by observing dramatic beriberi cures from treatment with extracts of ordinary rice bran in the Philippines in 1910. It was the proceeds from the thiamine patent which set up the Williams-Waterman Fund, and it was this fund which initiated the Bataan experiment in 1948.

In an area which had the highest beriberi mortality in the Far East, the conversion to vitamin-enriched rice for 65,000 people dropped the mortality rate 67% in the first year. In a neighboring control area, the rate went up slightly.

Dr. Williams is now on his way around the world with the statistics from the experiment. His aim is to visit each of the major rice-eating nations, showing them what vitamin enrichment has done—and can do—in combatting a major disease of half the world's peoples.

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ENTOMOLOGY

Tough Insects Being Bred

➤ CANADIAN scientists in a Dominion laboratory in Belleville, Ont., are trying to breed tough new strains of the world's "good" insects—insects which benefit man and can laugh at DDT.

What this could mean to the farmer is startling. He could release super honey bees to pollinate his crops or super-parasites to attack destructive caterpillars. At the same time he could spray his fields with insecticides, knowing the harmful insects would be killed but not the friendly insects.

Resistance to chemical poisons is not a new thing in the insect world. Only a short time after DDT was first used in World War II science began reporting mosquitos, flies and other pests which seemed immune to it.

The possibility of breeding this resistance into beneficial insects has already brought new knowledge of DDT and benzene hexachloride, another insecticide in the same chemical family.

Dr. D. P. Pielou of the Dominion Parasite Laboratory describes in the journal SCIENCE (Oct. 6) how crystals of these chemicals are laid on glass plates in extremely thin films used for the experiments.

The pure DDT crystals, left as a solution evaporates, appear under the microscopes like pine needles against a bank of snow. Benzene hexachloride crystals form a lattice of horizontals and verticals.

These kaleidoscopes of poison crystals enable the scientists to give ether-drugged insects precise doses of the insecticides. If the experiments are successful, they may some day produce "good" insects with iron constitutions as good as gas masks.

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GENERAL SCIENCE

Price of World Suicide

➤ THE PRICE of world suicide is about $40,000,000,000 and the work of a few years by a major power. And even then the money and time might be wasted.

This is the conclusion of Dr. James R. Arnold, member of the staff of the Institute for Nuclear Studies at the University of Chicago, who examined a recent statement by Dr. Leo Szilard, the A-bomb scientist, that a hydrogen bomb could be built which would wipe human life off the earth with radioactivity. Dr. Arnold's conclusions appear in the BULLETIN OF THE ATOMIC SCIENTISTS (Oct.).

Dr. Szilard declared, in a broadcast last February, that a huge hydrogen bomb with a casing of cobalt could produce trillions of fine particles of radioactive dust. This dust, he said, if spread by the winds evenly over the face of the earth, could kill every human being.

Dr. Arnold concludes that it would take a bomb ranging in size from one-quarter as big as the 40,000-ton battleship Missouri to two-and-a-half times the size of the Big Mo to do the job. Even then, he says, it is a question whether the neutrons produced by the fusion of the heavy hydrogen in the bomb would be absorbed by the cobalt so as to give rise to a dangerous radioactive isotope.

However, if that happened, he goes on, Dr. Szilard's assumption that the cobalt dust could be effectively distributed around the earth in the atmosphere is incorrect. Dr. Arnold says that the particles could be rained out of the atmosphere, or made harmless by other natural means before they spread evenly.

Dr. Arnold concludes that the world is in no immediate danger. He and Dr. Szilard agree that it would be much harder to build a bomb of the type that would confine its horror to one continent than it would be to build an undiscriminating bomb.

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On This Week's Cover

➤ DATING the remains of ancient cultures by means of radioactive carbon is a direct product of the atomic age, and this method has found the sandals shown on this week's cover of SCIENCE NEWS LETTER to be the oldest articles associated with man in America. Approximately 9,000 years old, the sandals were woven and worn by the ancient Americans around 7000 B.C., thereby antedating the oldest agricultural village in Iraq, which dates back to 5000 B.C. (See SNL, p. 285, this issue and p. 243, Oct. 14, for more on radiocarbon calendar.)

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MATHEMATICS-ENGINEERING

Low-Cost Computer Permits More Use

➤ LOW-COST electronic computers, costing less than $5,000 each, are now in use in Seattle in several departments of the Boeing Airplane Company solving aviation dynamic problems in a week that would require a year by older methods.

There are now many types of electronic computers, often called giant brains, in use throughout the nation but most of them are costly and complicated devices that must be used in computing centers. This new type is cheap and simple enough to be used in individual engineering rooms where problems in dynamics are solved. A competent engineer in dynamics can learn to operate it in one day.

The new instrument, nicknamed BEAC for Boeing Electronic Analogue Computer, is a simplified form of a large analogue computer put into service a year or so ago. The parent device solves problems relative to how a proposed plane or missile will behave in the air even before actual construction begins. The BEAC is so simple that it is described as a companion instrument to the slide rule.

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ASTRONOMY

'50 Astronomy Highlights

The flare-up of Proxima Centauri, the fifth star known to have such flares has been found to flare 50 times in the last quarter of a century.

➤ THE TOP ten astronomical highlights for the year 1950 have just been picked by Dr. Harlow Shapley, director of Harvard College Observatory:

1. Discovery that Proxima Centauri, star nearest to the earth, from time to time shoots out such terrific geysers of flaming gases from its surface that within a few minutes its brightness is doubled, then in less than a half hour its total light returns to normal. Fifty such flare-ups within the past 25 years have been caught on plates at Harvard College Observatory. This brings to five the number of stars known to have flares similar to those on our sun.

2. Plans for the world's highest astronomical observatory, to be so high the building will be pressurized and observers will live 5,000 feet nearer sea level. To be built under the auspices of the Indian Government, this observatory will be in the Himalayas, three miles above sea level.

3. Correction of the distance from the earth to the sun, and of the earth's path through space as well as more accurate calculation of the mass of the planets Mars, Venus, Mercury and earth-moon. These values were made possible through use of a new, more accurate path for the asteroid Eros, the orbit of which Dr. Eugene Rabe of Cincinnati Observatory obtained by analyzing observations of the past 30 years with a punch-card machine.

4. Finding of the Chubb meteor crater, larger than any previously known, in Quebec, Canada. Only partially explored, this crater's diameter is two and a half miles, or over three times as great as that of the meteor crater in Arizona.

5. Increasing to 50 the number of radio stars known to broadcast the static picked up here on earth with microwave instruments. Credit for this goes chiefly to British and Australian observers.

6. Successful photographs with the new two-mirror, Schmidt-type astronomical telescope at the Mills Observatory in Dundee, Scotland. This telescope, property of St. Andrews University, is the first of its type to go into operation.

7. Accurate measuring of Pluto, most distant of the planets, placing it as the second smallest planet and only 3,550 miles across. Dr. Gerald P. Kuiper of the University of Chicago's Yerkes Observatory took the all-important photographs with the 200-inch telescope while a guest of Palomar Observatory.

8. Determination with highest accuracy of the colors and luminosity of near-by stars by Dr. Olin J. Eggen of Lick Observatory. This work is highly significant in the study of the evolution of stars.

9. Great smog, caused by forest fires in Alberta, Canada, giving the sun a blue hue in Canada and here in the United States interfering with observations of a total lunar eclipse.

10. Hundredth anniversary of the first astronomical photograph, picture of the bright star Vega made with Harvard's 15-inch reflector with daguerreotype process.

Science News Letter, October 28, 1950

***TRICYCLE JEEP**—The tricycle-geared jeep is nimble as a cat, turning in a circle which has a 7-foot radius. Used to energize jet aircraft and military planes, it is also valuable for towing disabled planes out of the line of flight traffic.*

AERONAUTICS

Jeep Carries Generator To Start Jet Engines

➤ THE PROBLEM of starting the engines of jet-propelled airplanes on naval carrier vessels is solved with the development of a three-wheel, low-down "jeep" which carries an electric generator for starting the engines.

Jet-propelled planes, for the most part, are dependent on an outside source of electric power to start the engines. Storage batteries, such as are used in automobiles, are unsatisfactory because of the weight that would be required. Several types of self-contained self-starters have been proposed and some developed. But outside power is still used in most cases.

This special automobile, developed in Philadelphia by O. E. Szekely and Associates, is based on the Willys-Overland jeep. Being a three-wheel affair, it can turn a right angle corner and circle about in a very small space. Being only 36 inches high, it can pass with ease under the wings of planes on carrier flight decks.

Science News Letter, October 28, 1950

INVENTION

Sugar Made without Molasses By-Product

➤ MANUFACTURING white sugar without molasses as a by-product is promised by a process for which John Paul Bartz, Fort Lauderdale, Fla., was awarded patent 2,526,111. The sugar may be made from juices of sugar cane, sugar beets and citrus fruits. The product is claimed to have superior sweetening and improved nutritional properties as well as reduced fattening qualities.

The process is complicated from the layman's standpoint, but it includes the treatment of sugar-bearing fluids and juices by chemical and ion exchange methods. These remove salts present in the liquids and the excess of undesirable gums, pectins, dextrins and proteins. Coloring matter is removed by activated charcoal or bone char. The aqueous sugar solution is then concentrated into crystalline or powdered sugar or into liquid sugar.

Science News Letter, October 28, 1950

MEDICINE

Chemicals Substitute for Blood Plasma in Shock

➤ GOOD results in peacetime use of three chemicals developed as blood plasma substitutes during World War II are reported by Dr. John S. Lundy and colleagues of the section on anesthesia of the Mayo Clinic in Rochester, Minn.

The three chemicals are dextran, periston and a solution of gelatin. Dr. Lundy has been using dextran since April, 1946. Up to the first of this year, it has been given to about 1,500 patients for fall in blood pressure, termed mild or marked "shock," during operations or while under an anesthetic. In five or six cases it was considered of life-saving importance, having helped patients who had not benefitted from several transfusions of blood.

Dextran is a Swedish-developed chemical, a by-product of sugar manufacture.

Periston, which the Mayo scientists obtained from British-occupied Germany and from manufacturers in this country, is a solution of polyvinyl pyrrolidone. The periston used during World War II was a 2.5% solution which "did not make much of an impression." Results now being obtained with a 3.5% solution are so much better that it does not seem possible it is the same chemical, the scientists reported at a staff meeting at the clinic.

Science News Letter, October 28, 1950

SAFETY

Automatic Breathing Apparatus Versatile

➤ IMPROVED automatic breathing apparatus, for use in accidents, has been developed in Pittsburgh, Pa., by the Mine Safety Appliances Company. Police and fire departments, ambulance crews, hospitals and industrial-plant safety staff could be equipped with it.

It is intended for use in drownings, electric shocks and all kinds of asphyxiation, and is suitable for use even on newly-born babies.

The name "Pneolator" has been coined for it. Its uses requires only short training.

The device includes a rubber and plastic mouthpiece connected to two valves by four-foot lengths of rubber. One of the valves administers oxygen, from a holding tank, with positive pressure at regular intervals. The other valve lets oxygen flow only when the patient inhales and stops the flow when the patient exhales. The valves are arranged so that they interchange automatically, depending upon whether or not the patient is breathing.

The artificial respiration valve delivers oxygen to the lungs of a victim whose breathing has stopped. It does not suck air from the lungs, however. When the proper amount of oxygen has been admitted into the lungs, the valve shuts off. The elastic walls of the lungs and the flexible muscles of the diaphragm and chest cause exhalation.

Automatic intermittent positive pressure breathing was first developed during World War II at the aero-medical laboratories of the Air Force, Wright Field, Dayton, Ohio. The differential pressure instrument was designed to sustain breathing of injured airmen at high altitudes.

This new artificial respiration apparatus is unlike others in several respects. Principal among these is that the pressure of the oxygen administered by the cycling valve can be varied to meet a wide range of conditions. The valve can be set from a very gentle low pressure up to a little over normal atmospheric pressure.

Science News Letter, October 28, 1950

AERONAUTICS

Agreement Helps British Sell Airplanes in America

➤ INCREASING sales of British planes in the United States are expected in London as a result of a recent agreement under which American governmental authorities will accept the British Certificate of Airworthiness as equivalent to the certificate issued by the United States.

The result is that no technical obstacles now exist to the import of British aircraft into America. In 1934, the British and the United States governments each agreed to recognize the other's certificate of airworthiness. But by 1945, the Americans had added so many additional qualifications to the English certificate that the agreement became unworkable. The United Kingdom, however, continued to accept the American certificate.

In January 1949, both nations agreed to the international airworthiness requirements of the International Civil Aviation Organization which has representatives of over 50 nations. But the American government maintained its insistance that all aircraft flown within the United States must conform to the American national standards.

Credit for the new agreement belongs to a British delegation, headed by R. E. Hardingham of the Ministry of Civil Aviation, and representatives of the American government headed by D. W. Rentzel, then director of the Civil Aeronautics Administration but now chairman of the Civil Aeronautics Board. The meeting of the two groups was held in the United States during the past summer.

American acceptance of British aircraft certification is good news to the British aviation industry who expect to make more sales in the United States as a result. It is good news to the British government also, because sales to America means dollars, and "dollar markets" rank high in the present British economy.

Science News Letter, October 28, 1950

IN SCIEN

DENTISTRY

Fluorine Chemical Cuts Caries Prevention Cost

➤ A CUT of almost two-thirds in the cost of efforts to prevent tooth decay by putting fluorine into drinking water may result from a discovery by Dr. F. J. McClure of the National Institute of Dental Research, U. S. Public Health Service, Washington.

Sodium fluoride is the chemical now being added to the water supply in many communities in the hope of cutting down on tooth decay. But another, cheaper fluorine compound, sodium fluosilicate, may be just as effective, Dr. McClure's experiments with growing rats show.

Sodium fluosilicate is not only cheaper but contains more fluorine, so less of it needs to be used, thus cutting the cost still further.

Sodium fluosilicate now costs about four and one-half cents a pound. Sodium fluoride costs about 10 cents a pound. Cost of all chemicals for fluoridation of a million gallons of water using sodium fluoride is about $2.15. Using an equivalent amount of sodium fluosilicate, the cost would be about 76 cents.

Although scientists do not yet know exactly how valuable fluoridation of water supplies may be for preventing tooth decay, preliminary reports from several of 50 cities now testing the method show that tooth decay in children in these cities has been reduced as much as 40% to 50%.

The fluoridation method of trying to prevent tooth decay results from earlier research by Dr. H. Trendley Dean, director of the National Institute for Dental Research.

Science News Letter, October 28, 1950

NUTRITION

Plumper Thanksgiving Turkeys Due to Hormones

➤ YOUR Thanksgiving turkey may be plumper this year because of synthetic hormones. Scientists at the North Dakota Agricultural Experiment Station in Fargo, N. D., have tried "chemical caponizing" on turkey hens and found it works.

A chemical called diethyl stilbesterol is coming into widespread use among chicken growers to keep young cockerels from developing the muscular attributes of tough old roosters. It has the effect of caponization without surgery, making the meat more tender.

Kermit F. Schlamb and Reece L. Bryant, poultry husbandmen, tried the chemical on turkey breeder hens. They report successful boosting of the birds' weight and marketability.

Science News Letter, October 28, 1950

ENE FIELDS

INVENTION

Magnetic Disks Make Tape and Tacks Obsolete

➤ ROUND magnetic disks that hold tight to steel walls have made thumbtacks and scotch tape obsolete in the new General Electric Research Laboratories. When notices are posted or direction signs are installed, they are held up by the small alnico magnets that stick tightly to the steel sheets covering the walls.

Even name plates for offices and laboratories are fastened magnetically. It only takes a flick of the wrist to change a name. If scientists and engineers were hired and fired as speedily as Hollywood writers, the magnetic name plates would save much money and trouble.

Hats and even light raincoats can be hung up anywhere by use of the little magnetic fasteners.

Science News Letter, October 28, 1950

INVENTION

Natural Color Gum Cleans Teeth, Sweetens Breath

➤ CLEAN teeth and sweet breath are promised with a chewing gum containing dentifrices on which a patent was issued by the government recently.

The idea is not entirely new. Other chewing gums include teeth-cleaning ingredients and breath sweeteners, but they usually are black because of powdered charcoal in them. White gum is said to be the preferred type by constant chewers. This new product has a natural color.

This product contains the usual ingredients of standard chewing gums to which is added about 10% of a finely divided mixture of 90% silica and 10% alumina treated with methyl chlorsilanes. Kenneth K. Kearby, Cranford, N. J., is the inventor. Patent awarded is 2,525,072. It has been assigned to the Standard Oil Development Company.

Science News Letter, October 28, 1950

NUTRITION

Paraplegic Veterans Now Eating Better

➤ PARAPLEGIC veterans in New Jersey are eating better today than they were a year and a half ago, thanks to regular home visits from a dietitian who has been added to the team of doctors looking after these men under the New Jersey Paraplegic Veterans' Program.

A large number of the patients were suffering from "hidden hunger" when the dietitian, Miss Winifred C. Duffy, first began her work with them, she reported to the American Dietetic Association meeting.

Lack of knowledge of good nutrition, rather than lack of funds, was the reason in many cases. One patient, Miss Duffy reported, was "practically skin and bones and always fatigued." He lived alone and did his own cooking. He needed to be taught much about food values and methods of preparing foods. In a few months, he gained weight and was very appreciative of the services given him by the dietitian.

All the patients believed they had to drink beer, Miss Duffy found. It was explained to them that they should drink at least three quarts of fluids a day, but that they should also eat a good basic diet.

Many ate only one meal a day because they had trouble keeping down to their proper weight. One patient ate only sandwiches. Some were actually undernourished.

Some of their strange ideas about diet, Miss Duffy explained, came probably from the fact that before World War II very little was known about paraplegics and even physicians had much to learn about the best care for them.

In general, the patients were encouraged to eat three meals a day, high in protein and vitamins and low in calories and oxalates. These last two provisions are because of the tendency to put on weight and develop kidney stones through lack of physical activity.

Science News Letter, October 28, 1950

AERONAUTICS

Omnirange Guides Planes Of U. S. First Airways

➤ SOME 4,380 miles of airways equipped with the new-type radio guidance system known as omnirange are now in operation, the Civil Aeronautics Administration announced recently. The system is finally to blanket the entire United States.

Ground stations equipped with omnirange send out signals in all directions to guide airplane pilots. The radio ranges which it is replacing send signals in only four directions. In addition, omniranges use very high frequency radio signals with which "static" does not interfere. This means pilots will be able to receive clear signals at all times in spite of storms or other interference with radio transmission.

Some 400 omnirange stations will be finally in use to blanket the entire country with the omnirange system. Along the airways now in operation on omnirange beams are 41 stations. The airways connect Kansas City, Denver and Albuquerque. Others connect Omaha, Wichita, Tulsa, Oklahoma City, Fort Worth and El Paso. A total of 271 omniranges have been commissioned by the CAA. But others will be necessary before definite omnirange airways will be available.

Science News Letter, October 28, 1950

NUTRITION

Old People in Homes for Aged May Not Get Vitamins

➤ GRANDPA and Grandma need their vitamins but it is doubtful whether they get them when they are living in homes or other institutions for the aged.

Only nine of 21 states employ dietitians in homes for the aged to plan meals for the 75,000 or more old people living in these institutions, Mrs. Vera M. Walker, of the Florida State Welfare Board, found in a survey undertaken for the American Dietetic Association.

Where there is no dietitian, food service is the responsibility of almost anyone: a cook, manager, superintendent, matron, operator, proprietor, licensee where the homes are licensed by some state agency, a "woman with cooking experience," or a nurse.

If a special diet is required, as for a diabetic, it is prescribed by a physician. His orders are carried out by a nurse, the operator, the manager, the matron, the cook or the person in charge.

"A large but unknown number of senior citizens" are living in homes for the aged, including boarding homes, nursing homes, county or town farms, convalescent homes, rest homes, infirmaries and other types of institutions, the survey showed.

In the light of our modern knowledge of the great importance of proper food in the care, treatment and rehabilitation of the aged and chronically ill, dietitians, Mrs. Walker declared, will feel "deep concern" that no greater care is taken for provision of adequate and proper food for the residents and staff of institutions for the aged.

She recommended, in her report to the American Dietetic Association meeting in Washington, that wherever possible arrangements be made for regular, planned consulting service by dietitians to operators of homes for the aged.

Science News Letter, October 28, 1950

GENERAL SCIENCE

Lasker Planned Parenthood Award to Mrs. Sanger

➤ MRS. Margaret Sanger, internationally known leader of birth control movement, and Dr. Bessie L. Moses of Baltimore, obstetrician and medical director of the Bureau for Contraceptive Advice since she founded it in 1927, received the Lasker Foundation Awards in Planned Parenthood for 1950.

They are the first two women to receive these awards which previously have been given to seven men.

The usual $500 cash award has been doubled for Mrs. Sanger because of her "long untiring service in a cause which has become synonymous with her name."

Science News Letter, October 28, 1950

ASTRONOMY

Orion Enters Fall Skies

The celestial warrior can be seen in the east on November evenings. Jupiter is visible, and the planet Saturn may be seen late at night.

By JAMES STOKLEY

➤ FOR the first time since April, our maps of the evening skies show the constellation of Orion, the warrior. With the possible exception of the Great Bear, Ursa Major, of which the big dipper is a part, Orion is probably the most familiar of constellations.

On winter evenings it stands high in the south, with the three stars in a row that mark the warrior's belt and the collection of bright stars around it all combining to make it conspicuous.

At the times for which the accompanying maps are prepared (10:00 p.m. standard time on Nov. 1, an hour earlier on the 15th and two hours earlier at the end of the month), Orion is just appearing above the eastern horizon, with the belt stars forming a vertical row. To the left is Betelgeuse, marking one of Orion's shoulders. Rigel, in one of his legs, is to the right, for as we now see him, he is on his back. But as we watch him climbing higher and higher with the passage of time, he straightens into an upright position.

Taurus, the Bull

Above Orion is Taurus, the bull, with the bright and ruddy star Aldebaran. Taurus gazes balefully towards Orion, who according to the old pictures that used to be drawn around the stars, is represented with an upraised club as protection from the charging beast.

Toward the northeastern horizon, to the left of Orion, are Gemini, the twins, the brightest star of which is called Pollux. Above this group we find Auriga, the charioteer, with still another star of the first magnitude, named Capella.

Another aggregation of first-magnitude stars can be seen toward the west, but these are not bright orbs of the winter just making their entrance on the celestial stage. Three, at least, are stars that were conspicuous on summer evenings, now making their last bow before leaving our sight for several months.

Brightest of these is Vega, in Lyra, the lyre, in the northwest. Above it is the Northern Cross, now upright and with Deneb at the top. This cross is part of Cygnus, the swan. Directly west is another heavenly bird, Aquila, the eagle, of which Altair is the brightest star. Vega, Deneb, Altair—these are the three stars that shone so brilliantly overhead on evenings of late summer.

The last of the eight brightest stars now seen is one that belongs to the far southern constellation of Piscis Austrinus, the southern fish. It is called Fomalhaut and comes into view for a few months about early autumn. It now shows in the southwest.

Jupiter in South

But a little above and to the right of Fomalhaut is a far brighter object, the only planet easily visible at this time. It is Jupiter, whose motion around the sky, taking 12 years to complete, has now brought it into the constellation of Aquarius, the water carrier. At sunset Jupiter is high in the south; it sets in the west about midnight.

One other planet can be seen earlier, in the west. This is Mars, which sets about two and a half hours after the sun. Now approaching the part of its orbit farthest from the earth on the opposite side of the sun, which it will reach next spring, it is increasing in distance and getting fainter. However, it is still equal in brightness to a star of the first magnitude. Because it is moving rapidly through the sky toward the east, for the next couple of months it will continue to set about as long after sunset as it does at present.

Late at night the planet Saturn may be seen, in the constellation of Virgo, the virgin, rising about four hours ahead of the sun. Both Mercury and Venus are now so nearly in line with the sun that they are not visible.

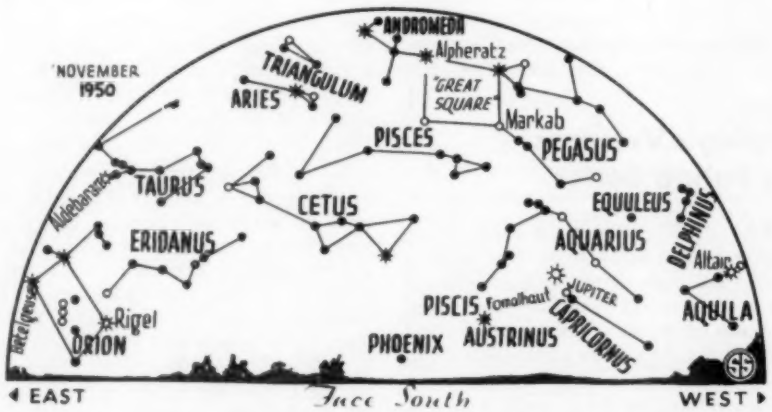
A less conspicuous but nevertheless important constellation—one that is now best for evening viewing—is Andromeda, the chained princess. This constellation is directly overhead at the times for which our maps are prepared. Below her, toward the northern horizon, is her mother Cassiopeia. To the left and a little lower in the sky, as measured from the queen, is the King, Cepheus. To the right is Perseus, the great champion who, in the mythological story, rescued Andromeda from the monster who was about to devour her.

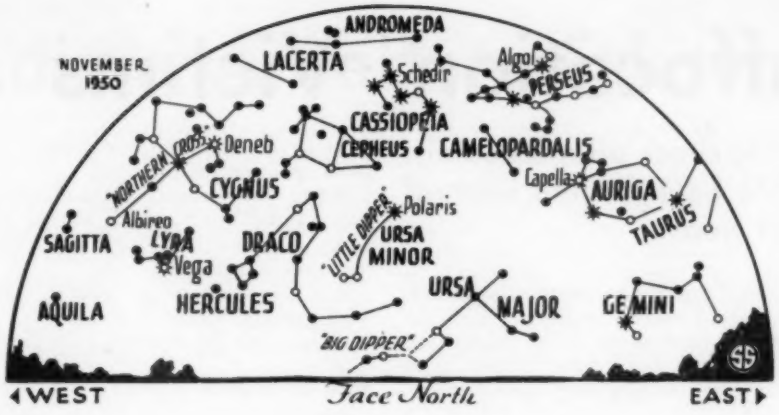
In Perseus, incidentally, is the curious star Algol, the original Arabic name of which means "the demon." Algol is one of the numerous binary stars. These, though they look like a single body, really consist of two globes revolving around the center of the system. In the case of Algol it happens that one of the stars is much fainter than the other and that the plane in which they revolve is nearly in the direction of the earth.

Revolutions of Algol

Thus every revolution, which takes two days and 21 hours, the dark one partially eclipses the bright one and the object we see in the sky gets fainter. In five hours it loses some two-thirds of its light. Then in the next five hours it returns to normal brilliance, that of a typical second-magnitude star. It is interesting to watch Algol night after night. The celestial time-table at the end of this article gives the times during the month at which the minimum brightness is reached during evening hours.

The distance of Algol from the solar system is such that its light, travelling 186,000 miles every second, takes about a century to reach us. And from the changes that occur in its light, astronomers have





been able to learn a considerable amount of data about the two bodies. The brighter member of the pair is 3.12 times the diameter of the sun, which makes it some 2,670,000 miles. The fainter star is a little larger, 3.68 solar diameters, or 3,180,000 miles. Their centers are 6,520,000 miles apart. The brighter is 160 times the luminosity of the sun, while the fainter is only 13 times the sun's brilliance. But even this is not the whole story, for there is a third star in the system, around which the eclipsing pair revolves every 1.9 years.

Time Table for November

Nov.	EST	
1	12:00 noon	Mercury on far side of sun
2	8:00 p. m.	Moon in last quarter
6	1:38 p. m.	Moon passes Saturn
9	6:25 p. m.	New moon
10	8:00 a. m.	Moon nearest, distance 222,000 miles
12	10:34 p. m.	Moon passes Mars
13	12:39 a. m.	Algol at minimum
	6:00 p. m.	Venus on far side of sun
15	9:28 p. m.	Algol at minimum
16	early a. m.	Meteors visible radiating from constellation of Leo
	10:06 a. m.	Moon in first quarter
	6:03 p. m.	Moon passes Jupiter
18	6:17 p. m.	Algol at minimum
24	10:14 a. m.	Full moon
	7:00 p. m.	Moon farthest, distance 252,600 miles

Subtract one hour for CST, two hours for MST, and three for PST.

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NUCLEAR PHYSICS

Largest Plastic Balloon Tracks Cosmic Particles

➤ THE LARGEST plastic balloon ever made, capable of carrying twice the instrument load of previous models, has soared over 20 miles above the earth.

Large light balloons are a valuable aid in learning more about the secrets of cosmic rays, believed to hold the key to many atomic mysteries.

Made of extremely thin strips of polyethylene, a plastic coming into wide use for packaging, the extra large size balloon resulted from the use of special tapes to bind the plastic strips.

Fully inflated, the huge plastic bag is 111 feet in diameter and 118 feet high and has a volume of 750,000 cubic feet. It was designed and built by General Mills Aeronautical Research Laboratories under contract with the Office of Naval Research.

This and similarly large balloons will be used to track down the primary cosmic ray particles continuously bombarding the earth from somewhere in space. Instruments must go beyond the heavy atmospheric blanket surrounding the earth to catch these primary rays. Below this blanket, only secondary particles are recorded.

Science News Letter, October 28, 1950

MEDICINE

Streptomycin Chief One Of 38 Anti-TB Chemicals

➤ SCIENTISTS have discovered 38 chemicals produced by molds, bacteria and fungi which are active against the tuberculosis germ, Dr. Selman A. Waksman of Rutgers University declared at the third annual meeting of the Detroit Institute for Cancer Research.

Streptomycin, however, is the only one of the 38 which is extensively used in the treatment of tuberculosis. The others are either too weakly active against the TB germs or too toxic to the human body or too new to be used in treatment of the disease.

Streptomycin is not always curative, especially in the more common types of tuberculosis of the lungs. Its value as a remedy is also limited by development of resistance to it on the part of disease germs and by the fact that it sometimes causes disturbances in the hearing mechanism.

The most significant contribution of streptomycin, Dr. Waksman said, is that it opened a way to the treatment of tuberculosis by chemicals and showed that chemical treatment of this disease, as in the case of most other germ-caused diseases, is possible.

Science News Letter, October 28, 1950

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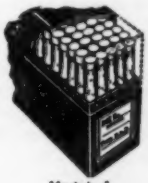
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MEDICINE

Air for "Suffocation" Victims

Breathing is the second item to check after bleeding. Artificial respiration may save a life between the interval when breathing stops and the heart stops.

By JANE STAFFORD

Fifth in a series of atomic first aid.

➤ DIFFICULT breathing or stoppage of breathing is the second thing you look for, after serious bleeding, when you are called on to give first aid. Oxygen from the air is essential to life. Anything interfering with or cutting off the oxygen supply seriously threatens life.

Certain cells in the brain die within four minutes if deprived of oxygen. The heart may continue beating for a short time after breathing stops. During this interval before the heart stops, you may be able to save life by giving artificial respiration.

Hands Always Available

Mechanical devices such as inhalators and respirators are often used to restore breathing in cases of suffocation. But these are not always immediately available and the victim may die before they can be gotten to him.

You have a pair of hands and that is all you need to give artificial respiration. Here are directions for the standard method:

1. Lay the patient on his belly, one arm extended directly overhead, the other arm bent at elbow with the face turned outward and resting on hand or forearm. Nose and mouth must be free for breathing.

Straddle Patient

2. Kneel straddling the patient's thighs with your knees at such a distance from his hip bones as will allow you to place your hands as follows: Palms of your hands on the small of the patient's back, fingers resting on the ribs, little fingers just touching the lowest ribs. Thumbs and fingers should be in a natural position with the tips of the fingers just out of sight.

3. With your arms straight, swing forward slowly so that the weight of your body is gradually brought to bear on the patient. Your shoulder should be directly over the heel of your hand at the end of the forward swing. Do not bend your elbows. This forward swing should take about two seconds.

4. Immediately swing backward so as to remove the pressure completely.

Repeat Double Movement

5. After two seconds, swing forward again. Repeat deliberately 12 to 15 times a minute the double movement of compression and release.

6. Continue artificial respiration without interruption until natural breathing is restored or until a physician pronounces the patient dead. You may have to continue it for four hours or longer.

7. As soon as artificial respiration has been started and while it is being continued, have an assistant loosen any tight clothing about the patient's neck, chest and waist.

Keep the patient warm. Do not give any liquids by mouth until he is fully conscious. After he revives, keep him lying down to avoid strain on the heart.

Watch the patient, because sometimes after natural breathing has started it stops again. Artificial respiration must then be re-started immediately.

If it is necessary to change operators while giving artificial respiration, do it without losing the rhythm of the procedure.

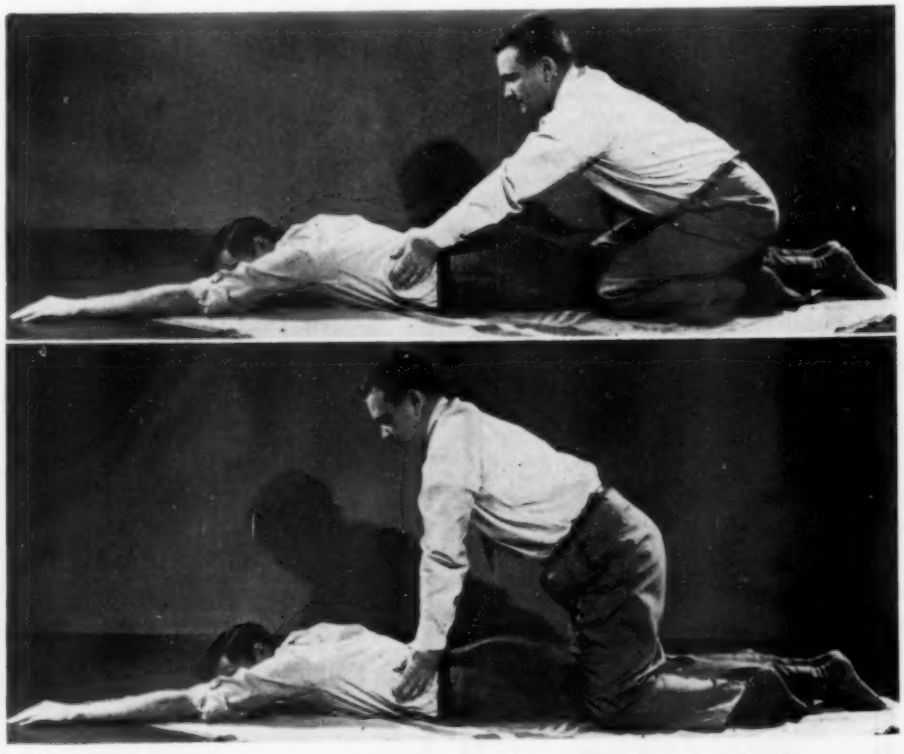
Sign of Revival

Signs that the patient is being revived by artificial respiration are a fading of the bluish color of the skin and, in fair-skinned persons, a flush of color; twitching of the mouth and "creeping" of the fingertips; and, most encouraging, a sobbing catch of the breath while air is being taken into the lungs.

Uses Are Many

Most people think of artificial respiration for victims of drowning, gas poisoning and electric shock. Other conditions in which you may need to give it are: compression of the chest, as by the cave-in of buildings, prolonged exposure to the cold, poisoning by sleeping medicines, excessive alcohol, hanging in attempted suicides, choking and puncture wounds of the chest.

Science News Letter, October 28, 1950



AIR FOR LIFE—Forward and back positions of the standard artificial respiration technique are shown.

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ARCHAEOLOGY

Indians Antedate Eskimos

➤ THERE were Indians living in the United States long before the first Eskimos of the North American continent.

This revolutionary finding, completely reversing the long-held opinion that the Eskimos came first and the Indians were derived from them, was presented to the National Academy of Sciences meeting in Schenectady, N. Y., at the new General Electric laboratory by Dr. William A. Ritchie, archaeologist for the State of New York at Albany.

Eskimo culture, as shown by radioactive carbon dates, is "immensely younger" than that of the early Indians of New York and other parts of the United States, Dr. Ritchie reported. The radioactive carbon dates were determined through the radiocarbon atomic calendar which Dr. William F. Libby of the University of Chicago reported to the Academy meeting.

The Eskimos are not older than about 1,000 years. Pre-Indians of New York State lived there at least 5,000 years ago. Some Eskimo culture was derived from those early Indians.

Dr. Ritchie's finding does not change the idea that America was populated from Asia via the Bering straits. It does mean that these first Americans came over the Bering straits much earlier than the Eskimos as we know them now and as they are known from the earliest archaeological evidence.

The radiocarbon dates for the Eskimos and the earlier Indians were set from radioactive carbon found in remains of things used by these peoples, and from bones and the charcoal of their fires.

Science News Letter, October 28, 1950

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WILDLIFE

NATURE RAMBLINGS

Quail

➤ MORE quail fall victim to chilled lead shot each autumn than any other game bird in North America. Hunted by man as well as by dogs, cats, foxes, skunks, weasels, snakes, great horned owls and sharp-eyed hawks, it is small wonder that the bobwhite has an exceedingly suspicious disposition. When the harvest moon is full over the shocked corn, this plump little field-dweller with the bombshell takeoff knows that the season of terror has returned.

Yet somehow the bobwhite will refuse again to be exterminated. The survival of American quail through the period of carefree market hunting into the present era of legal protection is one of the biological miracles of the Age of Gunpowder.

Not only in wild and out-of-the-way places does the quail still live, but all along the fence-rows of busy farms, even on the edges of cities. It is almost as if bobwhite knew how important he is to the insect-bedeviled farmers of the nation, and what a boon to humans who suffer from hayfever.

Bobwhites are so valuable as destroyers of weed seeds and insects that they deserve even more protection than they get. At one sitting a bird has been known to consume a thousand ragweed seeds. Another had eaten 5,000 seeds of foxtail grass, and a third fully 10,000 of the tiny seeds of the pigweed. And this is but the starch in the bobwhite diet; his meals contain so many injurious insects that he is worth many a quart of poison spray in a field.

But man, being perverse, continues to reason in this fashion: In the summer, grasshoppers ate our grain. Bobwhites ate the grasshoppers. Now we eat the bobwhites.

Quail are ground-loving birds, and seldom venture very far by air. They have a strong nesting and breeding urge, and when allowed to stick to business, average 14 offspring each year. To keep these large families firmly in tow, they have a wide repertoire of calls, shifting from tenderness to belligerency according to their mood. By means of the familiar whistling "bob . . . white" they attract their mates. The ringing "scatter call" keeps the coveys from wandering too far. A sharp "toil-ick, ick, ick" sounds the alarm when danger is near.

In escaping an enemy, bobwhite relies more on camouflage and the cover of tangled brush than upon breaking for the wild blue yonder. He would rather run than fly. But when discovery is imminent, a covey will burst from cover with a great "whirrr" of their wings, scattering in all directions at 30 to 40 mile-an-hour speeds.

By the suddenness and noise of their take-off, they often startle the hunter and leave him waving the muzzle of his gun in hapless confusion. It is the bobwhite's last resort. Even he, the king of upland game birds, cannot outfly modern high-powered lead poisoning.

Science News Letter, October 28, 1950

YOUR HAIR

Its Health, Beauty, and Growth
By Herman Goodman, M. D.,
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METEOROLOGY

Warm Weather Continues Over Most of Country

➤ THIS will continue to be an unusual fall. The extended forecast section of the Weather Bureau predicts that most of the country will have above normal temperatures until the middle of November.

The Pacific northwest, the northern Rocky Mountain states and the northern plains, as well as southern Florida, however, will be colder than normal. Southern Texas will have the warmest weather.

There is no prediction for any considerable area of the country of just plain normal temperatures.

Opposite corners of the country will experience above normal rain—and in some cases snow—during the next two weeks. Those are the Pacific northwest and the northern plains, and way across the country in southern Florida. There is a section of the country between those two, extending from the Southwest up through Texas and into the middle Atlantic states in which less than normal rains can be expected. The rest of the country is expected to get along on the usual amounts of rain.

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AMPUTATION PROSTHETIC SERVICE—Earle H. Daniel—*Williams and Wilkins*, 327 p., illus., $7.00. A text on the problems of the amputee.

THE BIRDS OF NORTH AND MIDDLE AMERICA—Herbert Friedmann—*Gov't. Printing Office*, Part XI, Smithsonian Nat'l Mus. Bull. 50, 793 p., illus., paper, $4.00. This part covers the American vultures; the hawks, eagles, kites, harriers and old vultures; the ospreys; and the falcons and caracaras.

CHEMICAL KINETICS—Keith J. Laidler—*McGraw-Hill*, 408 p., illus., $5.50. A general text for advanced courses.

CHEMISTRY: Visualized and Applied—Armand Joseph Courchaine—*Putnam*, 687 p., illus., $5.50. An introductory college text.

COMPETITIVE POSITION OF CHICKEN AND EGG PRODUCTION IN THE UNITED STATES—Raymond P. Christensen and Ronald L. Mighell *Gov't. Printing Office*, U. S. Dept. of Ag. Tech. Bull. No. 1018, 58 p., illus., paper, 20 cents.

EXPERIMENTING WITH NUMBERS: Teacher's Manual for Use with Beginners—Catherine Stern—*Houghton Mifflin*, 105 p., illus., paper, 60 cents. Many number games for beginners are presented.

EYES AND INDUSTRY (Formerly Industrial Ophthalmology)—Hedwig S. Kuhn—*Mosby*, 2nd ed., 378 p., illus., $8.50. The author includes much of the latest information from the literature in this field.

FIELD BOOK OF SEASHORE LIFE—Roy Waldo Miner—*Putnam*, 888 p., illus., $6.00. A manual of the more common invertebrate animals inhabiting the shallow oceanic waters of the Atlantic Coast. Many color plates and black and white illustrations.

THE GUIDANCE PROGRAM IN THE PUBLIC SECONDARY SCHOOLS IN NEW JERSEY—Rex B. Cunliffe—*Rutgers University Press*, 57 p., illus., paper, $1.00.

HISTORY OF THE WOMAN'S MEDICAL COLLEGE, PHILADELPHIA, PENNSYLVANIA 1850-1950—Gulielma Fell Alsop—*Lippincott*, 256 p., illus., $4.00.

INHERITANCE IN DOGS: With Special Reference to Hunting Breeds—Ojvind Winge—*Comstock*, 153 p., illus., $3.50. The author discusses general and specific hereditary characteristics of dogs. Translated from the Danish by Catherine Roberts.

INVENTORIES OF APPARATUS AND MATERIALS FOR TEACHING SCIENCE, Vol. I: Primary, Secondary and Vocational Schools—*UNESCO*, UNESCO Publ. No. 560, 92 p., $1.00. A reference manual for selecting essential equipment.

JACOB STEINER'S GEOMETRICAL CONSTRUCTIONS WITH A RULER: Given a Fixed Circle with Its Center—Raymond Clare Archibald, Ed.—*Scripta Mathematica*, 88 p., illus., $2.00. Translated from the first German edition by Marion Elizabeth Stark.

KEYS TO WOODY PLANTS—W. C. Muenscher—*Comstock*, 6th ed., 108 p., illus., $1.25. A guide to woody plants in the summer or winter condition. For students of systematic botany and interested laymen.

LABORATORY MANUAL FOR GENERAL BOTANY—Wilson N. Stewart, Harry J. Fuller and Oswald Tippo—*Holt*, 62 p., illus., paper, $1.25. To accompany COLLEGE BOTANY by Fuller and Tippo.

LIFE'S PICTURE HISTORY OF WORLD WAR II—Arthur B. Tourtellot, Ed.—*Time, Inc.* (Trade Distributors: Simon & Schuster), 368 p., illus., $10.00 (Deluxe Edition: $12.00). A collection of photographs portraying the history of World War II. John Dos Passos did the full page texts.

MEDICAL ENTOMOLOGY—Robert Matheson—*Comstock*, 2nd ed., 612 p., illus., $7.50. A college text brought up-to-date.

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OUR FOREIGN POLICY—Department of State—*Gov't. Printing Office*, Dept. of State Publication 3972, 99 p., illus., paper, 30 cents. A report of our present foreign policies and a brief discussion of the atom problem.

PHYSICAL EXAMINATION IN HEALTH AND DISEASE—Rudolph H. Kampmeier—*F. A. Davis*, 821 p., illus., $8.00. A textbook on physical diagnosis.

PLANTS OF BIKINI AND OTHER NORTHERN MARSHALL ISLANDS—William Randolph Taylor—*University of Michigan Press*, 227 p., illus., $5.50. Report on the flora of these islands before the detonation of the atomic bomb.

THE PRIMEVAL ATOM: An Essay on Cosmogony—Georges Lemaitre—*Van Nostrand*, 186 p., $3.00. A treatise on theoretical science translated from French by Betty H. and Serge A. Korff. Canon Lemaitre is the Belgian astronomer famous for his expanding universe theory.

THE PRIVATE LIFE OF THE PROTOZOA: And of Their Neighbors The Metazoa and The Insect Larvae—Winifred Duncan—*Ronald*, 141 p., illus., $3.00. Glimpses at the life cycles of the protozoa, flatworms, snails and other metazoa and of the insect larvae. For the beginning biology student and the layman-naturalist.

PROCEDURES FOR HOME FREEZING OF VEGETABLES, FRUITS, AND PREPARED FOODS: Classified Notes on Review of Literature—Elsie H. Dawson, Gladys L. Gilpin and Howard Reynolds—*Gov't. Printing Office*, U. S. Dept. of Ag. Handbook No. 2, 106 p., paper, 40 cents.

RADIO, TELEVISION AND SOCIETY—Charles A. Siepmann—*Oxford University Press*, 410 p., $4.75. Reviews the history of broadcasting in the United States, surveys its effects on the outlook and behavior of listeners and describes the systems under which it operates here and abroad.

RECENT ADVANCES IN OCULAR PROSTHESIS—J. H. Prince—*Williams and Wilkins*, 155 p., illus., $4.00. The author discusses the surgical and fitting technique of plastic artificial eyes.

SEROLOGY WITH LIPID ANTIGEN: With Special Reference to Kahn and Universal Reactions—Reuben L. Kahn—*Williams and Wilkins*, 327 p., $6.00. An advanced college text.

SEX IN PSYCHOANALYSIS—Sandor Ferenczi—*Basic*, 338 p., $3.50. A collection of some of the author's papers written between the years of 1908 and 1914 and translated from the Hungarian by Ernest Jones. The introduction is written by Clara Thompson. This book has been long out of print.

SOVIET STRENGTH AND STRATEGY IN ASIA—Ivar Spector—*Superior*, 52 p., illus., paper, $1.50. A sample coverage of what the Soviet Government has to say through the Soviet press about world issues.

STATIC AND DYNAMIC ELECTRICITY—William R. Smythe—*McGraw-Hill*, 2nd ed., 616 p., illus., $8.50. A college text brought up-to-date.

THE TEMPORAL REGION OF THE PERMIAN REPTILE DIADECTES—Everett Claire Olson—*Chicago Natural History Museum*, 15 p., illus., paper, 20 cents. A brief study of the temporal region of the skull of this ancient reptilian animal.

TRANSACTIONS OF THE WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS, Vol. XL, Part I—*Wisconsin Academy of Sciences, Arts, and Letters*, 267 p., illus., paper, $2.00.

TURKEY FOOT RIDGE SITE: A Mogollon Village, Pine Lawn Valley, Western New Mexico—Paul S. Martin and John B. Rinaldo—*Chicago Natural History Museum*, 159 p., illus., paper, $2.75. An archaeological investigation.

UNDERSTANDING NATURAL CHILDBIRTH: A Book For the Expectant Mother—Herbert Thoms and Laurence G. Roth—*McGraw-Hill*, 112 p., illus., $3.50. Many questions of the expectant mother are answered. A picture story is presented by David Linton.

VETERINARY BACTERIOLOGY AND VIROLOGY—Ival Arthur Merchant—*Iowa State College Press*, 4th ed., 885 p., illus., $7.25. A textbook for students of veterinary medicine.

WINES OF THE WORLD—Peter Valaer—*Abelard Press*, 576 p., $6.50. The story of wine from the appearance of the first seedling to the popping of the cork of the well-aged bottle.

ZOO SCHOOL—Mark Mooney, Jr.—*The Camera, Inc.* (U. S. Distributor: Greenberg), 62 p., illus., paper, $1.00. Animal pictures, rhymes and sketches for children.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 542. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

BLINKING GEIGER COUNTER, developed for use of amateur and professional prospectors for uranium and other radioactive ore, has a flashing neon light to indicate the radioactive counts. The instrument is sensitive to both beta and gamma radiation.

Science News Letter, October 28, 1950

ILLUMINATED ANTENNA for automobiles, recently patented, has a small electric bulb at the top which is energized from the car's storage battery. The electrical connections are such that they do not interfere with the radio-reception function of the antenna.

Science News Letter, October 28, 1950

FISHERMAN'S FLY-BIN holds up to 70 hooks and flies in a pocket-size plastic casing in five compartments, each a section of a solid permanent magnet. Hooks and flies are held firmly, separately and vertically by the magnetic grip. They are visible through a transparent cover made of plastic.

Science News Letter, October 28, 1950

MIRROR BLANKS, for large mirrors to take a small picture from the face of the television tube and enlarge it to fill a motion picture theater screen, are now being produced by production-line methods.

The 26-inch blank in the picture is contrasted with a 6-inch reflector.

Science News Letter, October 28, 1950

SLINGSHOT to shoot an arrow is much like the forked-stick affair long used by boys but is molded of plastic and has a wire between the upper ends of the arms. The notch of the arrow fits a cord connecting the rubber "power strands" while its shaft lies on the wire.

Science News Letter, October 28, 1950

LUBRICANT, made from the extremely "greasy" metal molybdenum, comes in liquid form having the appearance of oil but containing no oil whatever. After application to bearing-surfaces, the liquid carrier evaporates, leaving the molybdenum to provide a dry but excellently lubricated bearing.

Science News Letter, Ocfober 28, 1950

NON-FREEZING FAUCET, to deliver water from a building to an outside hose, has a shank that extends through the building wall with the valve in a protected position at the inner end. The handle, on the outside, can be easily removed from its stem, thus preventing unauthorized use of the faucet.

Science News Letter, October 28, 1950

ANTI-STATIC LIQUID, to treat all kinds of plastic phonograph records, will keep them dust-free and eliminate cracking noise and static electricity. It may be used on television magnifier lenses to stop static-caused dust attraction.

Science News Letter, October 28, 1950

Do You Know?

There are nearly 14,000 *rubber* plantations in India.

Some *birds* use saliva as cement in making mud nests.

The southern extremity of *Norway* is farther north than the northern tip of Newfoundland.

Trained observers can identify from airplanes forest oaks infested with *oak wilt;* the damaging disease usually shows up first in discolored branches near the top.

Over 80% of the heat required to keep comfortable an experimental *solar house* built by the Massachusetts Institute of Technology was obtained directly from the sun during the past two winters.

Little Smokey, the black bear on fire-prevention posters, actually knows the meaning of forest fire; before coming to the National Zoo in Washington, he was burned by a forest fire in New Mexico.

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